

EPA SCIENCE ADVISORY BOARD
(Radiation Advisory Committee)
PROPOSED PROJECT

Project Title/Subject: Commentary on Dose and Risk Assessment (Revised 2/03)

Requesting Organization: Radiation Advisory Committee (RAC) – Self-initiated

RAC Lead Members: Drs. Bruce Boecker & Richard Hornung

Requesting Official: Not applicable

Program Contact: Jack Kooyoomjian, RAC DFO [202-564-4557]

Background:

The Radiation Advisory Committee (RAC) is regularly requested to review or provide advice regarding EPA efforts to assess radiation doses and risks from radionuclides in the environment. For example, in the past few years the RAC has provided review and/or advice on the ISCORS approach for evaluating the potential risks associated with radionuclides in sewage sludge, the EPA risk coefficients for radon (and its decay products) and the Federal Guidance No. 13 risk coefficients. Several issues are commonly considered when such reviews or advisories are requested:

- Specification of uses to which the assessment is to be applied (e.g., screening, regulatory or guidance only),
- Selection of approaches (e.g., deterministic, probabilistic),
- Use of bounding estimates vs. central estimates,
- Use of critical group vs. maximally exposed individual or reasonably maximally exposed individual (including sensitive sub-populations, age-groups, etc.),
- Selection of mathematical risk models,
- Definition of exposure scenarios,
- Selection of exposure pathways,
- Selection of parameter values,
- Definition of exposure-to-dose and dose- or exposure- to risk models,
- Assumptions regarding low-dose linearity and the possibility of dose-response relations other than linear-non-threshold, and
- Treatment of sensitivity, uncertainty, and variability in modeling.

Many of these issues are common to the evaluations the RAC performs for the EPA. In the past the RAC has discussed these issues as they arose in particular evaluations. It would be useful to the RAC to have a commentary to which it can refer when these issues arise rather than having to repeat the discussion in future advisories and reviews. Having such a commentary would not preclude engaging in similar discussions in specific future deliberations as information becomes

available. However, a commentary on dose and risk assessment could provide a framework for such discussions, as necessary.

The RAC recognizes that some of the above issues are driven by EPA policy; however, in its capacity as an advisory body, the RAC believes that a carefully considered technical discussion of these issues would be useful to the SAB and to EPA. Because it is composed of individuals with varied expertise and perspective, the RAC is uniquely qualified to develop such a commentary.

Tentative Charge: Develop a commentary on selected issues related to dose and risk assessment for radionuclides in the environment.

3/18/2003

EPA SCIENCE ADVISORY BOARD
(Radiation Advisory Committee)
DRAFT PROPOSED PROJECT

Project Title/Subject: Commentary on Education/Training Related to Guidance
Developed by EPA and Multi-Agency Work Groups (2/03)

Requesting Organization: Radiation Advisory Committee (RAC) – Self-initiated

RAC Lead Members Drs. Janet Johnson & Jack Kooyoomjian, with assistance from Dr.
Jill Lipoti

Requesting Official: Not applicable

Program Contact: Jack Kooyoomjian, RAC DFO [202-564-4557]

Background:

The Radiation Advisory Committee (RAC) has reviewed several interagency guidance documents related to evaluation of radionuclide concentrations in the environment, including the Multi-Agency Radiological Survey and Site Investigation Manual (MARSSIM) and the Multi-Agency Radiological Laboratory Analytical Protocols (MARLAP). These documents were developed as an admirable collaboration among governmental agencies. The process used by the agencies can be a model in other areas where such consistent guidance is desirable.

The RAC had concerns in both of the above cases with regard to training of individuals who would use the guidance. The MARSSIM Work Group devised a training program that has been remarkably successful in enhancing the ability of the users to implement the guidance and in improving the document itself. In its recently completed MARLAP review, the RAC made a similar recommendation. In addition to its concerns with regard to the need for training MARLAP users, the RAC concluded that the available pool of professionally trained individuals who could implement the protocols is rapidly diminishing. The RAC believes that this is such a significant problem that it included a suggestion for support of professional education as major recommendations outside of the charge to the committee.

The issues of training and professional education deficiencies are not unique to the radiation protection discipline but are applicable to environmental protection as a whole. Therefore, the RAC proposes to take the lead in preparing a commentary on training and professional education. The document would be developed by an SAB panel composed of members from existing standing committees and such consultants as are deemed necessary to provide a coherent and persuasive commentary on the need for training and support for professional development in areas of environmental expertise where the supply of experts is not sufficient to accomplish the goals of environmental protection.

Tentative charge: Develop a commentary on user training for implementation of EPA (and inter-agency) guidance. Suggest ways of supporting professional education in fields where the supply of qualified individuals is diminishing or already inadequate.

EPA SCIENCE ADVISORY BOARD
(Radiation Advisory Committee)
DRAFT PROPOSED PROJECT

Project Title/Subject: Homeland Security – Consultation on the Process for Determining Protective Action Guides (PAGs) for Recovery from a Terrorist Incident Involving Radioactive Materials (2/03)

Requesting Organization: Radiation Advisory Committee (RAC) – Self-initiated

RAC Lead Members: Dr. Lynn Anspaugh

Requesting Official: Not applicable

Program Contact: Jack Kooyoomjian, RAC DFO [202-564-4557]

Background:

The threat of a terrorist attack on the United States involving radioactive materials or a nuclear device is very real and has been much discussed by federal, state, and local agencies, the media, and the general public. Because of its unique fear factor and the public's perception of radiation as "deadly", the credibility of governmental agency actions during the recovery from such an attack must be exceptionally high. The principal real risk from a "dirty bomb" is the public panic that could result during the incident and unwarranted disruption of normal commerce during the recovery phase that could result from unreasonably stringent clean-up requirements. In order for the public to accept reasonable standards as protective, the process for deriving such standards must be perceived by the public as being credible.

The specific dose or contamination level that will be deemed acceptable for resumption of normal commerce under such circumstances is a policy issue and the Radiation Advisory Committee (RAC) is not proposing to become involved in these deliberations. However, the RAC does see a need for independent scientific review of the process by which such standards are derived. Specifically, the RAC proposes to consult with the EPA on the following issues related to the process of standard development:

- Exposure scenario development and modeling
- Exposure pathway definition
- Potential implementation of institutional controls
- Consideration of variables that will be considered in developing incident-specific recovery standards
- Personal risk management and communication with the public
- Other issues as may be identified during the consultation

The RAC is proposing a Consultation on these topics. Since this would be a Consultation and not a Review or Advisory, no specific charge has been identified.

EPA SCIENCE ADVISORY BOARD
(Radiation Advisory Committee)
DRAFT PROPOSED PROJECT

Project Title/Subject: Homeland Security – Consultation on the Siting and Instrumentation for Augmentation of the Environmental Radiation Ambient Monitoring System (2/03)

Requesting Organization: Radiation Advisory Committee (RAC) – Self-initiated

RAC Lead Members Dr. Jill Lipoti

Requesting Official: Not applicable

Program Contact: Jack Kooyoomjian, RAC DFO [202-564-4557]

Background:

EPA is planning to augment and supplement the Environmental Radiation Ambient Monitoring System (ERAMS) with additional monitoring capability in response to the potential for release of radioactive materials into the environment. The Radiation Advisory Committee (RAC) has been tasked with reviewing the ERAMS in the past and is familiar with the program and the instrumentation involved. Due to the limited resources available for installation and maintenance of such monitoring capability and interpretation of the results, the systems must be as efficient as possible under the circumstances. The RAC is in a unique position to evaluate the effectiveness of proposed additional monitoring capability.

Due to the short time frame, this project is proposed as a Consultation with the expectation that it may evolve into an Advisory at a later date.

Tentative Charge: Review the proposed supplements to the existing radiological environmental monitoring networks and develop an Advisory.

3/18/2003

EPA SCIENCE ADVISORY BOARD
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DRAFT PROPOSED PROJECT

Project Title/Subject: Homeland Security – Commentary on Communicating Radiation Risk to the Public in Regard to Potential Terrorist Attacks (2/03)

Requesting Organization: Radiation Advisory Committee (RAC) – Self-initiated

Requesting Official: Not applicable

RAC Lead Members Drs. Helen Grogan & Genevieve Roessler

Program Contact: Jack Kooyoomjian, RAC DFO [202-564-4557]

Background:

The greatest potential harm from a radiological terrorist attack (dirty bomb) on the United States will be due to the ensuing public panic in the aftermath and the individual sense of loss of control over risk. The best antidote to overreaction on the part of the public and its potential consequences is adequate and credible information and empowerment of individuals. The Radiation Advisory Committee (RAC) proposes to develop a commentary on risk communication in the event of a radiological incident that will include a proposed simple method by which members of the public can evaluate the impact of personal and voluntary actions on their radiation dose and risk.

The RAC proposes to establish a Panel specifically to develop this commentary. The RAC would add a social scientist and, perhaps, a journalist as consultants to the RAC for this effort.

Tentative Charge: Develop a commentary on methods of communicating with the public in the aftermath of a radiological terrorist event in order to give individuals a sense of control over their own risks.

3/18/2003

EPA SCIENCE ADVISORY BOARD
(Radiation Advisory Committee)
DRAFT PROPOSED PROJECT

Project Title/Subject: Consultation on Research Agenda to Identify and Fill-in the Gaps in the Science Needed for Homeland Security Defenses (2/03)

Requesting Organization: Radiation Advisory Committee (RAC) – Self-initiated

RAC Lead Members Dr. Jan Johnson, with some information provided by Dr. Gilles Bussod

Requesting Official: Not applicable

Program Contact: Jack Kooyoomjian, RAC DFO [202-564-4557]

Background:

The Office of Research and Development (ORD) and the Office of Water (OW) have been tasked with setting a research agenda to address the potential gaps in the science needed for homeland security. A significant portion of that task will involved radiation protection. The Radiation Advisory Committee (RAC) has the unique capability within the Science Advisory Board (SAB) to provide advice and consultation in this area.

The RAC proposes to set up a Panel to provide a consultation with ORD and OW, in conjunction with members of other standing committees, in regard to research needs.